

## DESCRIPTION

EXERCISE DEVICE

## Technical Field

[0001] The present invention relates to an exercise device for imposing an exercise load onto the human body while being worn on the human body so as to enable the human body to produce advantageous effects, such as physical strength improvement, injury prevention, rehabilitation, lifestyle-related disease prevention, or blood circulation facilitation.

## Background Art

[0002] A training machine that uses muscular strength enhancing weights, a pair of dumbbells that impose a weighted load, and a tube type or spring type exercise machine that imposes a tensile load have been proposed as exercise devices for applying an exercise load to the human body. According to these devices, the muscular power of main muscles, accessory muscles, balance muscles, etc., is heightened by applying an exercise load, such as pushing, pulling, expanding, or closing, to limbs, so that advantageous effects, such as physical strength improvement, injury prevention, rehabilitation, lifestyle-related disease prevention, and blood circulation facilitation, can be obtained.

[0003] These conventional exercise devices, i.e., the training machine using weights, the dumbbells that apply a weighted load, and the tube type or spring type exercise machine that applies a tensile load, do not have only advantages but also the following defects. For example, the training machine for muscular strength

enhancement is defective in the fact that (a) much time is consumed to set or adjust weight, strength, length, etc., when exercises to be performed, (b) the machine is inconvenient to be carried since the machine is great in mechanical dimensions or in weight, (c) limitations are imposed on a training space since the machine is required to secure an installation location, (d) limitations are imposed on a training space since noise occurs, and (e) exercises are difficult to be stopped when an exerciser has hurt a part of his/her body during the exercises.

[0004] On the other hand, for example, the tube type or spring type exercise machine is convenient to be carried, is used without rigid limitations on a training space, and can be easily stopped being operated during exercises. However, this exercise machine has a conventional problem in the fact that, (f) if an exerciser removes his/her hands from the exercise machine by mistake in handling to handle, tubes or springs will rebound, and grips thereof will strike his/her hands and feet or face, so that the exerciser injures the body or pinches his/her skin between coils of the springs. This problem is crucial especially in aged persons who are weak in grasping power and in muscular power and are not accustomed to how to handle the machine.

[0005] The present invention has been made in consideration of these circumstances, and aims to provide an exercise device for which exercises can start to be performed easily and conveniently and that causes no hindrance even when the device is handled by mistake.

#### Disclosure of the Invention

[0006] The present inventor has repeatedly performed various

examinations in the light of the circumstances mentioned above. As a result, the present inventor has found that a pair of body-worn portions are not easily separated from foreparts of limbs, and even an aged person can start exercises easily and conveniently even if the grasping power or muscular power of the limbs is weak, by a pair of body-worn portions constructed of a pair of annular parts and a pair of gripped parts connected with the pair of annular parts so as to be gripped between fingers and by connecting the body-worn portions together by a connection member made of an elastic material in order to wear an exercise device on the foreparts of the limbs. The present invention has been made based on this expertise.

[0007] The first aspect of the invention provides an exercise device including (a) a pair of body-worn portions having a pair of annular parts to be worn on foreparts of limbs and a pair of gripped parts connected with the pair of annular parts, respectively, so as to be gripped between fingers; and (b) a stretchable connection member made of an elastic material by which the pair of body-worn portions are connected together. Accordingly, the pair of body-worn portions are formed to have the pair of annular parts and the gripped parts connected with the pair of annular parts so as to be gripped between fingers, and the body-worn portions are connected together by the connection member made of an elastic material in order to wear the exercise device on the foreparts of the limbs. Therefore, the body-worn portions are not easily separated from the foreparts of the limbs, and exercises can be started easily and conveniently without causing a hindrance like a situation in which the body-worn portion slips off from the foreparts of the limbs even if an aged person weak in grasping power or in muscular power of the limbs uses the device.

[0008]        The second aspect of the invention provides an exercise device including (a); a pair of body-worn portions having a pair of annular wristband parts to be worn on both wrists and a pair of grip parts connected with the pair of wristband parts, respectively, so as to be grasped with hands; and (b) a stretchable connection member made of an elastic material by which the pair of body-worn portions are connected together. Accordingly, the pair of body-worn portions are formed to have the pair of wristband parts and a pair of grip parts connected with the pair of wristband parts, respectively, so as to be grasped with hands, and the pair of body-worn portions are connected together by the stretchable connection member made of an elastic material. Therefore, the body-worn portions are not easily separated from the hands, and exercises can be started easily and conveniently without causing a hindrance like a situation in which the body-worn portion slips off from the hands even if an aged person weak in grasping power or in muscular power of the arms uses the device.

[0009]        The third aspect of the invention provides the exercise device according to the second aspect of the invention, wherein the connection member is connected to the wristband parts so that a connected point of the connection member with each of the wristband parts can move in a circumferential direction of the wristband part. Accordingly, the connection member can be freely moved in the circumferential direction of the wristband part. Therefore, the position or angle of a load during exercises can be changed, and the degree of freedom of the kind of exercise can be improved.

[0010]        The fourth aspect of the invention provides the exercise device according to the second or third aspect of the invention, wherein the connection member is a cloth band stretchable in a

longitudinal direction thereof, and is annularly sewn so that the connection member can pass through an inside of each of the pair of wristband parts. Accordingly, the skin is more safely prevented from being pinched between coils than a case in which a spring is used. Additionally, since it is annularly sewn, a load twice the tension in the longitudinal direction of a cloth band can be applied.

[0011] The fifth aspect of the invention provides the exercise device according to the fourth aspect of the invention, wherein the connection member is sewn from synthetic fiber fabric. Accordingly, even when the grip parts come into contact with the skin, a better feel can be comfortably obtained than a case in which a spring is used.

[0012] The sixth aspect of the invention provides the exercise device according to any of the second to fifth aspects of the invention, wherein the wristband part is annularly sewn from a cloth band stretchable in a longitudinal direction. Accordingly, the annular wristband part formed from the sewn cloth band is tightly and fitly worn on the wrist owing to its elasticity regardless of the size of the wrist.

[0013] The seventh aspect of the invention provides the exercise device according to the sixth aspect of the invention, wherein the wristband part is sewn from synthetic fiber fabric. Accordingly, a better feel can be comfortably obtained than a case in which a rubber-made wristband part is used as the wristband part.

[0014] The eighth aspect of the invention provides the exercise device according to any of the second to seventh aspects of the invention, wherein the grip part has its both ends fixed to two positions, respectively, of the wristband part. Accordingly, both ends of the grip part are fixed to two positions of the wristband

part worn on the wrist, and hence the body-worn portion becomes more difficult to be separated from the hand.

[0015] The ninth aspect of the invention provides the exercise device according to any of the second to eighth aspect of the invention, wherein the grip part is sewn from synthetic fiber fabric, and has its both ends sewn on two positions, respectively, away from each other of the annular wristband part. Accordingly, both ends of the wristband part sewn from synthetic fiber fabric are sewn on two positions away from each other of the wristband part, and hence the wristband part is a cloth having a good feel, and the body-worn portion becomes more difficult to be separated from the hand.

[0016] The tenth aspect of the invention provides the exercise device according to any of the second to ninth aspects of the invention, wherein the grip part is made of a material thicker and harder than the wristband part. Accordingly, the grasping power of the hand grasping the grip part is effectively given to the body-worn portion, and hence the body-worn portion becomes more difficult to be separated from the hand.

#### Brief Description of the Drawings

[0017] FIG. 1 is a perspective view explaining a structure of an exercise device according to an embodiment of the present invention.

[0018] FIG. 2 is a side view of a body-worn portion which is viewed from a direction perpendicular to the longitudinal direction of a grip part of the exercise device according to the embodiment of the present invention.

[0019] FIG. 3 shows an example of how to use the exercise device

according to the embodiment of the present invention.

#### Best Mode for Carrying out the Invention

[0020] An embodiment of the present invention will be hereinafter described in detail with reference to the attached drawings.

[0021] FIG. 1 is a perspective view explaining a structure of an exercise device 10 according to the embodiment of the present invention, and FIG. 2 is a side view of a body-worn portion 30 which is viewed from a direction perpendicular to the longitudinal direction of a grip part 24 to be gripped of the exercise device 10. As shown in FIG. 1, the exercise device 10 is made up of a pair of body-worn portions 30 having a pair of annular wristband parts 22 and a pair of grip parts 24 connected with the pair of wristband parts 22, respectively, and a connection member 20 by which the body-worn portions 30 are connected together. The dimensions of the exercise device 10 in a state of being used are, for example, 200mm in overall length, 100mm in height, and 100mm in depth.

[0022] The connection member 20 is formed by sewing an elastic synthetic-fiber fabric woven from stretchable synthetic fibers, such as acrylic fibers or polyester fibers, like a double-layered obi so as to elastically expand and contract in the longitudinal direction, i.e., in the circumferential direction. In order to connect the pair of wristband parts 22 together, the fabric shaped like a double-layered obi is passed through the inside of the wristband part 22 so that a connected point of the connection member 20 with the wristband part 22 can move in the circumferential direction of the wristband part 22, and both ends of the obi-like fabric are sewn to become annular.

[0023] The wristband part 22 is formed by sewing a stretchable synthetic-fiber fabric like a double-layered obi and then sewing the fabric so as to become annular in the same way as the connection member 20.

[0024] The grip part 24 is formed such that the same synthetic fiber fabric as the connection member 20 is sewn like a double-layered obi, and then both ends of the resulting obi-like fabric are sewn on two positions, respectively, of the wristband part 22 that are away from each other, i.e., two positions spaced in the circumferential direction. As shown in FIG. 2, the grip part 24 is thicker than the connection member 20 and the wristband part 22. This thickness is obtained by tightly packing polyester cotton or pieces of cloth into the inside of the obi-like fabric when the synthetic fiber fabric is sewn like a double-layered obi. Therefore, the grip part 24 is harder and thicker than the wristband part 22 although the grip part 24 is elastic.

[0025] A description will now be given of how to use the thus structured exercise device 10. FIG. 3 depicts an example of how to use the exercise device 10 of the present invention. As shown in FIG. 3, the fingers 50 are first inserted into each of the pair of wristband parts 22 from the side of the wristband part 22 on which the grip part 24 is not sewn, and then the wristband part 22 is worn on the wrist, and the grip part 24 is gripped so as to be placed between the thumb and the forefinger. In this state, exercises to tense or relax the muscles are repeatedly performed so as to expand or contract the connection member 20. A method to expand both wrists to the right and left, back and forth, or up and down, or a method to intersect the arms can be mentioned as how to apply a force by which the connection member 20 is expanded



or contracted. A method to bend or extend both elbows can be mentioned as another method to perform this exercise. A method to move both wrists before the chest, higher than the shoulder, to the right, to the left, or behind the back can also be mentioned. The exercise can be performed in a standing posture, in a seated posture, or in a lying posture.

[0026] For example, a method to keep the wrists in front of the chest and then move both arms up and down or alternately move the arms forward can be mentioned as a method to enhance the muscular power of the arm or the shoulder. Another method is carried out such that the wrists are placed at the vicinity of exerciser's side while extending both elbows, and the right arm is moved toward the back of the waist symmetrically.

[0027] Next, a description will be given of another example of how to use the exercise device 10 of the present invention. For example, in order to perform exercises while wearing the exercise device 10 on the toes of each foot, the toes are inserted into the wristband part 22, and the grip part 24 is gripped, for example, between the big toe and the second toe in the same way as the way to be worn on the wrists. Thereafter, the wristband part 22 is pushed to the arch of the foot. In this state, exercises to tense or relax the muscles are repeatedly performed so as to expand or contract the connection member 20. As in a case in which the exercise device 10 is worn on the wrists, the exercises can be variously performed in this case.

[0028] As described above, according to this embodiment, the exercise device 10 is made up of the pair of body-worn portions 30 having the pair of annular wristband parts 22 to be worn on the foreparts of the limbs and the grip parts 24 to be gripped between

the fingers that are connected with the pair of wristband parts 22, respectively, and the stretchable connection member 20 which is made of an elastic material and by which the body-worn portions 30 are connected together. Therefore, exercises can start to be easily and conveniently performed without causing a hindrance, such as a situation in which the body-worn portion 30 slips off from the fingers or the toes, even if an exerciser, such as an aged person, is weak in grasping power or in muscular power of the limbs.

[0029] Additionally, according to this embodiment, the connection member 20 is connected to the wristband part 22 so that a connected point of the connection member 20 with the wristband part 22 can move in the circumferential direction of the wristband part 22. Therefore, the connection member 20 can be freely moved in the circumferential direction of the wristband part 22, and hence the position or angle of a load can be changed during exercises, and the degree of freedom of the kind of the exercise can be improved. As a result, the muscular strength of the neck, shoulder, back muscles, arms, stomach muscles, etc., of the body can be enhanced, and the human body is allowed to produce advantageous effects, such as physical strength improvement, injury prevention, rehabilitation, lifestyle-related disease prevention, or blood circulation facilitation.

[0030] Additionally, according to this embodiment, the connection member 20 is made of a stretchable cloth band, and is annularly sewn so that the connection member 20 can pass through the inside of each wristband part 22. Therefore, the skin is more safely prevented from being pinched between coils of a spring than a case in which such a spring is used. Additionally, since it is annularly sewn, a load twice the tension in the longitudinal

direction of the cloth band can be applied.

[0031] Additionally, according to this embodiment, the wristband part 22 is annularly sewn from a stretchable cloth band. Therefore, the annular wristband part 22 formed from the sewn cloth band is tightly and fitly worn on the wrist or the toes owing to its elasticity regardless of the size of the wrist or the toes.

[0032] Additionally, according to this embodiment, the grip part 24 is formed by sewing both ends thereof on two positions, respectively, of the annular wristband part 22 that are spaced out, and is thicker and harder than the wristband part 22. Therefore, the grip part 24 can be easily gripped, and the body-worn portion becomes more inseparable from the fingers or the toes.

[0033] Additionally, according to this embodiment, the connection member 20, the wristband parts 22, and the grip parts 24 that constitute the exercise device 10 are sewn from a synthetic fiber fabric. Therefore, even when the connection member 20, the wristband parts 22, and the grip parts 24 come into contact with the skin or are worn on the wrist or the toes or are gripped during exercises, a better feel can be comfortably obtained than a case in which a spring is used as the connection member or a case in which a rubber-made wristband part is used as the wristband part. Additionally, an exerciser will never injure the body because the body-worn portion is soft, even if the body-worn portion separates from the fingers or the toes and strikes the body.

[0034] Additionally, according to this embodiment, the exercise device 10 can be used in a standing posture, in a seated posture, or in a lying posture. Therefore, for example, the exercise device 10 can be used for exercises performed on a hospital bed or for exercises aimed at rehabilitation.

[0035]        Additionally, according to this embodiment, the exercise device 10 is sewn from a synthetic fiber fabric. Therefore, the exercise device 10 has a light weight of about 100 grams, and the dimensions of the exercise device 10 are 100mm in overall length, 100mm in height, and 60mm in depth, for example, when the body-worn portion 30 is placed thereon and is crushed. Therefore, the exercise device 10 can be easily carried, and space is saved because no setting is required. Additionally, since sounds never occur during exercises, the exercise device 10 can be used in a quiet location, e.g., in a hospital or library.

[0036]        Additionally, according to this embodiment, exercises using the exercise device 10 are performed by an exerciser's own force unlike exercises using, for example, the training machine mentioned above. Therefore, there is no need to adjust the load of the device so as to obtain a load suitable for the exerciser, and exercises can be stopped at any time during the exercises.

[0037]        Although one embodiment of the present invention has been described as in the above with reference to the drawings, the present invention is applicable to other aspects.

[0038]        For example, although the connection member 20 is an annular cloth band, the connection member 20 may be formed by connecting a plurality of annular cloth bands together like chains.

[0039]        The connection member 20 is an annular cloth band. However, instead, the connection member 20 may be formed not like a ring but like a tape having both ends. Additionally, the connection member 20 may be made of an elastic material, such as rubber.

[0040]        Additionally, the connection member 20 can be formed by connecting the pair of body-worn portions 30 together. For

example, the pair of grip parts 24 may be connected together.

[0041] Additionally, although the connection member 20, the wristband parts 22, and the grip parts 24 that constitute the exercise device 10 are synthetic fiber fabrics, what is needed is to form these with elastic cloth. Therefore, for example, these may be woven from natural fiber fabrics or elastic threads, or may be natural fiber cloth or synthetic fiber cloth processed to have elasticity.

[0042] Additionally, the grip part 24 may be formed by putting elastic sponges or rubber pieces into its inside formed like a double-layered obi, or by placing a plurality of synthetic fiber fabrics on each other.

[0043] Additionally, exercises using the exercise device 10 may be performed in such a manner as to wear one of the body-worn portions 30 of the exercise device 10 on the fingers and as to wear the other body-worn portion 30 on the toes. As in a case in which the body-worn portions 30 are worn on both wrists or both toes, exercises are variously performed in this case, and the same effects can be obtained.

[0044] The foregoing is, of course, one embodiment of the present invention. The present invention can be variously modified without departing from the scope thereof.

#### Industrial Applicability

[0045] As described above, the present invention can be suitably used as an exercise device to impose an exercise load while being worn on the human body so as to enable the human body to produce advantageous effects, such as physical strength improvement, injury prevention, rehabilitation, lifestyle-related disease prevention,

or blood circulation facilitation.